Quiz.1.Math.Econ.Anal.sample.14.09.25. NEPTUN: Name:

0.1. **No.1.**

(1) Compute $C = \begin{pmatrix} -3 & -1 \\ -2 & 1 \end{pmatrix} \begin{pmatrix} 1 & -3 \\ 3 & 3 \end{pmatrix}$. How much is the sum of C's entries?

A) 10, B) 7, C) 8, D) 6, E) 9

(2) Compute the square of the Eucledian length of $\{2, 2, -1, 2\}^T$!

A) 9, B) 12, C) 10, D) 11, E) 13

(3) Suppose that a plane contains the point $\{2, 1, -1\}^T$ and its normal vector is $\{-1, -1, -2\}^T$. Write down its equation in the form $Ax + By + Cz - D = 0$. How much is $(A + B + C)/D$?

A) 3, B) 2, C) 1, D) 0, E) 4

(4) Suppose that the following equation holds: $\alpha \begin{pmatrix} -3 \\ 0 \end{pmatrix} + \beta \begin{pmatrix} -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 8 \\ 1 \end{pmatrix}$. Compute $\alpha + \beta$!

A) -5, B) -6, C) -7, D) -2, E) -4

(5) Compute x, if the vectors $\{-1, x, 2, -1\}^T$ and $\{3, -3, -3, 3\}^T$ are orthogonal to each other!

A) -9, B) -3, C) -6, D) -4, E) -5

(6) Let $\phi\left(\begin{pmatrix} x \\ y \end{pmatrix}\right) = \begin{pmatrix} 1x + 5y \\ 2x + 5y \end{pmatrix} = A \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the sum of A's entries?

A) 12, B) 9, C) 10, D) 13, E) 8

(7) Compute the scalar product of $\{3, 3, 2, -1\}^T$ and $\{2, 2, 3, -1\}^T$!

A) 19, B) 17, C) 16, D) 14, E) 15

1^1: , 2^1: , 3^1: , 4^1: , 5^1: , 6^1: , 7^1: ,

Quiz.1.Math.Econ.Anal.sample.14.09.25. NEPTUN: Name:

0.2. **No.2.**

(1) Suppose that a plane contains the point $\{-1,1,2\}^T$ and its normal vector is $\{3,1,-3\}^T$. Write down its equation in the form $Ax+By+Cz-D=0$. How much is $(A+B+C)/D$?

A) $-\frac{3}{8}$, B) $-\frac{1}{4}$, C) 0, D) $-\frac{1}{8}$, E) $-\frac{5}{8}$

(2) Suppose that the following equation holds: $\alpha \begin{pmatrix} 0 \\ 1 \end{pmatrix} + \beta \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} -6 \\ 7 \end{pmatrix}$. Compute $\alpha+\beta$!

A) -7, B) -5, C) -8, D) -6, E) -10

(3) Let $\phi\left(\begin{pmatrix} x \\ y \end{pmatrix}\right) = \begin{pmatrix} 5x+2y \\ 1x+3y \end{pmatrix} = A \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the sum of A's entries?

A) 10, B) 11, C) 7, D) 9, E) 8

(4) Compute $C = \begin{pmatrix} -3 & -3 \\ -1 & 2 \end{pmatrix} \begin{pmatrix} -2 & 2 \\ 1 & 2 \end{pmatrix}$. How much is the sum of C's entries?

A) -7, B) -6, C) -8, D) -3, E) -2

(5) Compute the scalar product of $\{3,-2,3,2\}^T$ and $\{3,3,-1,-2\}^T$!

A) -3, B) -5, C) -8, D) -6, E) -4

(6) Compute the square of the Eucledian length of $\{1,1,2,-3\}^T$!

A) 15, B) 11, C) 10, D) 12, E) 13

(7) Compute x, if the vectors $\{-1,x,2,3\}^T$ and $\{3,3,2,-3\}^T$ are orthogonal to each other!

A) $-\frac{4}{3}$, B) $\frac{5}{3}$, C) $\frac{8}{3}$, D) $-\frac{7}{3}$, E) $-\frac{1}{3}$

1^1: , 2^1: , 3^1: , 4^1: , 5^1: , 6^1: , 7^1: ,

Quiz.1.Math.Econ.Anal.sample.14.09.25. NEPTUN: Name:

0.3. **No.3.**

(1) Suppose that a plane contains the point $\{3,3,3\}^T$ and its normal vector is $\{-1,-2,1\}^T$. Write down its equation in the form $Ax+By+Cz-D=0$. How much is $(A+B+C)/D$?

A) $-\frac{1}{3}$, B) 0, C) -1, D) $\frac{1}{3}$, E) $-\frac{2}{3}$

(2) Compute the square of the Eucledian length of $\{-2,2,-3,2\}^T$!

A) 21, B) 19, C) 17, D) 18, E) 16

(3) Compute $C=\begin{pmatrix} -2 & 3 \\ -1 & -3 \end{pmatrix}\begin{pmatrix} -1 & -3 \\ -3 & 2 \end{pmatrix}$. How much is the sum of C's entries?

A) 9, B) 7, C) 12, D) 8, E) 11

(4) Suppose that the following equation holds: $\alpha\begin{pmatrix} -1 \\ 0 \end{pmatrix}+\beta\begin{pmatrix} 3 \\ 3 \end{pmatrix}=\begin{pmatrix} 5 \\ 3 \end{pmatrix}$. Compute $\alpha+\beta$!

A) -1, B) -4, C) -3, D) -6, E) -5

(5) Let $\phi\left(\begin{pmatrix} x \\ y \end{pmatrix}\right)=\begin{pmatrix} 4x+3y \\ 1x+3y \end{pmatrix}=A\begin{pmatrix} x \\ y \end{pmatrix}$. How much is the sum of A's entries?

A) 9, B) 11, C) 7, D) 6, E) 8

(6) Compute x, if the vectors $\{2,x,-1,-3\}^T$ and $\{2,2,-3,2\}^T$ are orthogonal to each other!

A) $-\frac{1}{2}$, B) $-\frac{11}{2}$, C) $-\frac{5}{2}$, D) $-\frac{7}{2}$, E) $-\frac{9}{2}$

(7) Compute the scalar product of $\{-3,2,3,1\}^T$ and $\{-3,3,-1,2\}^T$!

A) 14, B) 9, C) 11, D) 13, E) 10

1^1: , 2^1: , 3^1: , 4^1: , 5^1: , 6^1: , 7^1: ,

Quiz.1.Math.Econ.Anal.sample.14.09.25. NEPTUN: Name:

0.4. **No.4.**

(1) Suppose that the following equation holds: $\alpha \begin{pmatrix} 0 \\ -1 \end{pmatrix} + \beta \begin{pmatrix} -2 \\ -3 \end{pmatrix} = \begin{pmatrix} -2 \\ 0 \end{pmatrix}$. Compute $\alpha + \beta$!

A) -3, B) -7, C) -6, D) -4, E) -2

(2) Suppose that a plane contains the point $\{-2, 2, -2\}^T$ and its normal vector is $\{2, 2, -3\}^T$. Write down its equation in the form $Ax + By + Cz - D = 0$. How much is $(A + B + C)/D$?

A) 0, B) $-\frac{1}{2}$, C) $\frac{1}{6}$, D) $-\frac{1}{3}$, E) $-\frac{1}{6}$

(3) Compute the square of the Eucledian length of $\{-3, -1, -2, 1\}^T$!

A) 11, B) 10, C) 12, D) 15, E) 13

(4) Let $\phi\left(\begin{pmatrix} x \\ y \end{pmatrix}\right) = \begin{pmatrix} 4x + 5y \\ 3x + 4y \end{pmatrix} = A \begin{pmatrix} x \\ y \end{pmatrix}$. How much is the sum of A's entries?

A) 12, B) 16, C) 14, D) 11, E) 13

(5) Compute x, if the vectors $\{-2, x, -3, -1\}^T$ and $\{3, 2, 1, 1\}^T$ are orthogonal to each other!

A) 6, B) 2, C) 5, D) 4, E) 1

(6) Compute the scalar product of $\{-3, 3, 3, 3\}^T$ and $\{-2, -3, 1, -3\}^T$!

A) -12, B) -9, C) -14, D) -13, E) -11

(7) Compute $C = \begin{pmatrix} 2 & 2 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} -1 & 2 \\ 3 & 2 \end{pmatrix}$. How much is the sum of C's entries?

A) 19, B) 23, C) 22, D) 21, E) 18

1^1: , 2^1: , 3^1: , 4^1: , 5^1: , 6^1: , 7^1: ,

Quiz.1.Math.Econ.Anal.sample.14.09.25. NEPTUN: Name:

0.5. **No.5.**

(1) Let $\phi\left(\begin{pmatrix} x \\ y \end{pmatrix}\right) = \begin{pmatrix} 4x+2y \\ 3x+3y \end{pmatrix} = A\begin{pmatrix} x \\ y \end{pmatrix}$. How much is the sum of A's entries?
A) 12, B) 9, C) 7, D) 10, E) 8

(2) Compute x, if the vectors $\{1, x, 2, -3\}^T$ and $\{2, 1, -3, -2\}^T$ are orthogonal to each other!
A) -2, B) -4, C) -5, D) -6, E) -7

(3) Suppose that the following equation holds: $\alpha\begin{pmatrix} -3 \\ 0 \end{pmatrix} + \beta\begin{pmatrix} 3 \\ -1 \end{pmatrix} = \begin{pmatrix} 6 \\ -1 \end{pmatrix}$. Compute $\alpha + \beta$!
A) -3, B) -1, C) -4, D) -2, E) 0

(4) Compute $C = \begin{pmatrix} -3 & 2 \\ -3 & -2 \end{pmatrix}\begin{pmatrix} -3 & 3 \\ -1 & 3 \end{pmatrix}$. How much is the sum of C's entries?
A) -5, B) -2, C) 0, D) -4, E) -1

(5) Compute the square of the Eucledian length of $\{-1, 3, 1, 3\}^T$!
A) 17, B) 20, C) 18, D) 15, E) 16

(6) Compute the scalar product of $\{-3, 1, 1, -3\}^T$ and $\{1, 3, 2, 3\}^T$!
A) -11, B) -9, C) -12, D) -10, E) -7

(7) Suppose that a plane contains the point $\{-2, -1, -2\}^T$ and its normal vector is $\{2, -3, -2\}^T$. Write down its equation in the form $Ax + By + Cz - D = 0$. How much is $(A + B + C)/D$?
A) -4, B) -5, C) -2, D) -3, E) -1

1^1: , 2^1: , 3^1: , 4^1: , 5^1: , 6^1: , 7^1: ,

Solutions							
1	1^1:A,	2^1:E,	3^1:E,	4^1:D,	5^1:D,	6^1:D,	7^1:A,
2	1^1:D,	2^1:B,	3^1:B,	4^1:D,	5^1:E,	6^1:A,	7^1:C,
3	1^1:D,	2^1:A,	3^1:C,	4^1:A,	5^1:B,	6^1:A,	7^1:A,
4	1^1:E,	2^1:C,	3^1:D,	4^1:B,	5^1:C,	6^1:B,	7^1:B,
5	1^1:A,	2^1:A,	3^1:E,	4^1:C,	5^1:B,	6^1:E,	7^1:E,